WE CLAIM:

1. A system useable in electrical control sensors for shaft speed signal frequency change rate tests, detecting intermittent or "in-range" failures, comprising:

means for measuring frequency of a shaft speed signal;

means for estimating a short-term variance (standard deviation) of the measured signal using the equation: $Var[x] = E[x^2] - E^2[x]$, where $E[x^2]$ is an estimated average of the squared measured signal over a predefined short term, and $E^2[x]$ is a squared estimated average of the measured signal over the predefined short term;

means for comparing the estimated variance with a predefined variance limit for a predefined amount of time; and

means for deeming the measured signal invalid, if the estimated variance exceeds the predefined variance limit for the predefined amount of time.

2. The system according to claim 1, wherein the means for comparing the estimated variance with a predefined variance limit for a predefined amount of time includes a latching counter.

3. The system according to claim 2, wherein the latching counter time out rate being proportional to a time period the measured input is true.

4. The system according to claim 1, wherein the means for estimating a short-term variance of the measured signal includes a plurality of filters performing averaging function.

5. The system according to claim 4, wherein the filters selected from a group comprising analog filters, digital IIR filters, digital FIR filters, and rolling average filters.

6. The system according to claim 1, wherein the system being implemented in a software program includes a set of computer-executable program instructions executed within the gas turbine engine control system.

7. The system according to claim 1, wherein the system being implemented is in a hardware circuitry.

8. A system useable in electrical control sensors for shaft speed signal frequency change rate tests, detecting intermittent or "in-range" failures, comprising:

means for measuring frequency of a shaft speed signal;

means for calculating a rate of change (time derivative) of the measured signal;

means for estimating a short-term variance (standard deviation) of the measured signal rate of change using the equation: $Var[x] = E[x^2] - E^2[x]$, where $E[x^2]$ is an estimated average of the measured signal squared rate of change over a predefined short term, and $E^2[x]$ is a squared estimated average of the measured signal rate of change over the predefined short term;

means for comparing the estimated variance with a predefined variance limit for a predefined amount of time; and

means for deeming the measured signal invalid, if the estimated variance exceeds the predefined variance limit for the predefined amount of time.

9. The system according to claim 8, wherein the means for comparing the estimated variance with a predefined variance limit for a predefined amount of time includes a latching counter.

10. The system according to claim 9, wherein the latching counter time out rate being proportional to a time period the measured input is true.

11. The system according to claim 8, wherein the means for estimating a short-term variance of the measured signal rate of change includes a plurality of filters performing averaging function.

12. The system according to claim 11, wherein the filters selected from a group comprising analog filters, digital IIR filters, digital FIR filters, and rolling average filters.

13. The system according to claim 8, wherein the system being implemented in a software program includes a set of computer-executable program instructions executed within the gas turbine engine control system.

14. The system according to claim 8, wherein the system being implemented is in a hardware circuitry.

15. A method useable in electrical control sensors for shaft speed signal frequency change rate tests, detecting intermittent or "in-range" failures, comprising the following steps:

(a) measuring frequency of a shaft speed signal;

(b) estimating a short-term variance (standard deviation) of the measured signal using the equation: $Var[x] = E[x^2] - E^2[x]$, where $E[x^2]$ is] is an

estimated average of the squared measured signal over a predefined short term, and $E^2[x]$ is a squared estimated average of the measured signal over the predefined short term;

(c) comparing the estimated variance with a predefined variance limit for a predefined amount of time; and

(d) if the estimated variance exceeds the predefined variance limit for the predefined amount of time, deeming the measured signal invalid.

16. The method according to claim 15, wherein the step for comparing the estimated variance with a predefined variance limit for a predefined amount of time uses a latching counter.

17. The method according to claim 16, wherein the latching counter time out rate being proportional to a time period the measured input is true.

18. The method according to claim 15, wherein the step for estimating a short-term variance of the measured signal using a plurality of filters performs averaging function.

19. The method according to claim 18, wherein the filters selected from a group comprising analog filters, digital IIR filters, digital FIR filters, and rolling average filters.

20. The method according to claim 15, wherein the method being implemented in a software program includes a set of computer-executable program instructions executed within the gas turbine engine control system.

21. The method according to claim 15, wherein the method being

implemented is in a hardware circuitry.

22. A method useable in electrical control sensors for shaft speed signal frequency change rate tests, detecting intermittent or "in-range" failures, comprising the following steps:

(a) measuring frequency of a shaft speed signal;

(b) calculating a rate of change (time derivative) of the measured signal;

(c) estimating a short-term variance (standard deviation) of the measured signal rate of change using the equation: $Var[x] = E[x^2] - E^2[x]$, where $E[x^2]$ is an estimated average of the measured signal squared rate of change over a predefined short term, and $E^2[x]$ is a squared estimated average of the measured signal rate of change over the predefined short term;

(d) comparing the estimated variance with a predefined variance limit for a predefined amount of time; and

(e) if the estimated variance exceeds the predefined variance limit for the predetermined amount of time, deeming the measured signal invalid.

23. The method according to claim 22, wherein the step for comparing the estimated variance with a predefined variance limit for a predefined amount of time uses a latching counter.

24. The method according to claim 23, wherein the latching counter time out rate being proportional to a time period the measured input is true.

25. The method according to claim 22, wherein the step for estimating a short-term variance of the measured signal rate of change using a plurality of filters perform averaging function.

26. The method according to claim 25, wherein the filters selected from a group comprising analog filters, digital IIR filters, digital FIR filters, and rolling average filters.

27. The method according to claim 22, wherein the method being implemented in a software program includes a set of computer-executable program instructions executed within the gas turbine engine control system.

28. The method according to claim 22, wherein the method being implemented is in a hardware circuitry.